



Table IV: HLA Class I Standard Peptide Binding Affinity.

| ALLELE | STANDARD PEPTIDE | SEQUENCE | SEQ ID NO: | STANDARD BINDING AFFINITY (nM) |
|--------|---------------------|------------|------------------|--------------------------------------|
| A*0101 | 944.02 | YLEPAIAKY | 2109 | 25 |
| A*0201 | 941.01 | FLPSDYFPSV | 2110 | 5.0 |
| A*0202 | 941.01 | FLPSDYFPSV | 2111 | 4.3 |
| A*0203 | 941.01 | FLPSDYFPSV | 2112 | 10 |
| A*0205 | 941.01 | FLPSDYFPSV | 2113 | 4.3 |
| A*0206 | 941.01 | FLPSDYFPSV | 2114 | 3.7 |
| A*0207 | 941.01 | FLPSDYFPSV | 2115 | 23 |
| A*6802 | 1072.34 | YVIKVSARV | 2116 | 8.0 |
| A*0301 | 941.12 | KVFPYALINK | 2117 | 11 |
| A*1101 | 940.06 | AVDLYHFLK | 2118 | 6.0 |
| A*3101 | 941.12 | KVFPYALINK | 2119 | 18 |
| A*3301 | 1083.02 | STLPETYVVR | 2120 | 29 |
| A*6801 | 941.12 | KVFPYALINK | 2121 | 8.0 |
| A*2402 | 979.02 | AYIDNYNKF | 2122 | 12 |
| B*0702 | 1075.23 | APRTLVL | 2123 | 5.5 |
| B*3501 | 1021.05 | FPFKYAAAF | 2124 | 7.2 |
| B51 | 1021.05 | FPFKYAAAF | 2125 | 5.5 |
| B*5301 | 1021.05 | FPFKYAAAF | 2126 | 9.3 |
| B*5401 | 1021.05 | FPFKYAAAF | 2127 | 10 |

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TECH CENTER 1600/2900

Table V. HLA Class II Standard Peptide Binding Affinity.

| Allele | Nomenclature | Standard Peptide | SEQ ID | Sequence | Binding Affinity (nM) |
|-----------|--------------|------------------|--------|------------------------------|-----------------------|
| DRB1*0101 | DR1 | 515.01 | 2128 | PKYVKQNTLKLAT | 5.0 |
| DRB1*0301 | DR3 | 829.02 | 2129 | YKTIAFDEEARR | 300 |
| DRB1*0401 | DR4w4 | 515.01 | 2130 | PKYVKQNTLKLAT | 45 |
| DRB1*0404 | DR4w14 | 717.01 | 2131 | YARFQSQTTLKQKT | 50 |
| DRB1*0405 | DR4w15 | 717.01 | 2132 | YARFQSQTTLKQKT | 38 |
| DRB1*0701 | DR7 | 553.01 | 2133 | QYIKANSKFIGITE | 25 |
| DRB1*0802 | DR8w2 | 553.01 | 2134 | QYIKANSKFIGITE | 49 |
| DRB1*0803 | DR8w3 | 553.01 | 2135 | QYIKANSKFIGITE | 1600 |
| DRB1*0901 | DR9 | 553.01 | 2136 | QYIKANSKFIGITE | 75 |
| DRB1*1101 | DR5w11 | 553.01 | 2137 | QYIKANSKFIGITE | 20 |
| DRB1*1201 | DR5w12 | 1200.05 | 2138 | EALIHQLKINPYVLS | 298 |
| DRB1*1302 | DR6w19 | 650.22 | 2139 | QYIKANAKFIGITE | 3.5 |
| DRB1*1501 | DR2w2β1 | 507.02 | 2140 | GRTQDENPVVHFFK NIVTPRTPPP | 9.1 |
| DRB3*0101 | DR52a | 511 | 2141 | NGQIGNDPNRDIL | 470 |
| DRB4*0101 | DRw53 | 717.01 | 2142 | YARFQSQTTLKQKT | 58 |
| DRB5*0101 | DR2w2β2 | 553.01 | 2143 | QYIKANSKFIGITE | 20 |

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The "Nomenclature" column lists the allelic designations used in Tables XIX and XX.



SEQUENCE

Table XIX
CEA DR Super Motif Peptides with

| Core Sequence | Core SeqID Num | Exemplary Sequence | Exemplary SeqID Num | Position | DR1 | DR2w81 | DR2w202 | DR3 | DR4w4 | DR4w15 | DR5w11 | DR5w12 |
|---------------|----------------|--------------------|---------------------|----------|---------|--------|---------|--------|---------|--------|---------|---------|
| IPWRLLT | 1962 | RWCIPWRLLTASL | 1815 | 10 | 0.6100 | 0.0110 | -0.0007 | 0.0150 | 0.0830 | | | -0.0005 |
| WRLLTAS | 1963 | CIPWRLLTASLT | 1816 | 12 | | | | | | | | |
| LLTASLT | 1964 | WRLLTASLTFTW | 1817 | 15 | | | | | | | | |
| LLTASLT | 1965 | ORLLTASLTFTWNP | 1818 | 16 | -0.0004 | | | | -0.0022 | | | |
| LTASLTFTW | 1966 | LLTASLTFTWNP | 1819 | 17 | | | | | | | | |
| FTWNPPTT | 1967 | ASLTFTWNPPTTAKL | 1820 | 22 | | | | | | | | |
| FWNPPTTAK | 1968 | LLTFTWNPPTTAKL | 1821 | 24 | | | | | | | | |
| WNPTTAKL | 1969 | LTFTWNPPTTAKLTIE | 1822 | 25 | | | | | | | | |
| TIESTP | 1970 | TAKI TIESTPNAVE | 1823 | 33 | | | | | | | | |
| LVHNLPOH | 1971 | EVLLLVHNLPOHLFG | 1824 | 50 | 2.5000 | 0.2300 | 0.0013 | 0.8900 | 0.8600 | | 0.0340 | |
| YKGERVDGN | 1972 | V11LVHNLPOHLFG | 1825 | 51 | | | | | | | | |
| IGYVIGTO | 1973 | YSWYKGERVDGNROI | 1826 | 65 | | | | | | | | |
| IGTOGATPG | 1974 | NROIIGYVIGTOOAT | 1827 | 76 | | | | | | | | |
| YSGRRLP | 1975 | GYVIGTOOATPGPAY | 1828 | 81 | | | | | | | | |
| IYPNASLT | 1976 | GREIYPNASLTION | 1829 | 92 | | | | | | | | |
| YPNASLT | 1977 | REIYPNASLTION | 1830 | 97 | 0.6200 | 0.3800 | 0.0024 | 0.2700 | 0.0930 | | 0.0029 | |
| YPNASLT | 1978 | ELIYPNASLTION | 1831 | 98 | | | | | | | | |
| YPNASLT | 1979 | NASLTIONLNDITG | 1832 | 99 | 0.3500 | 0.1500 | -0.0007 | 0.1400 | 0.0390 | | -0.0005 | |
| YPNASLT | 1980 | ASLTIONLNDITG | 1833 | 104 | 0.0011 | | | | -0.0022 | | | |
| YPNASLT | 1981 | IONLNDITGFTLH | 1834 | 105 | | | | | | | | |
| YPNASLT | 1982 | DTGFTLHVKSDLV | 1835 | 109 | | | | | | | | |
| YPNASLT | 1983 | FTLHVKSDLVN | 1836 | 116 | 0.0720 | 0.0180 | 0.0250 | 0.0013 | 0.0260 | | 0.0080 | |
| YPNASLT | 1984 | YTLHVKSDLVN | 1837 | 117 | | | | | | | | |
| YPNASLT | 1985 | YTLHVKSDLVN | 1838 | 119 | | | | | | | | |
| YPNASLT | 1986 | YTLHVKSDLVN | 1839 | 121 | | | | | | | | |
| YPNASLT | 1987 | YTLHVKSDLVN | 1840 | 122 | | | | 0.1300 | | | | |
| YPNASLT | 1988 | YTLHVKSDLVN | 1841 | 126 | | | | 0.0058 | | | | |
| YPNASLT | 1989 | YTLHVKSDLVN | 1842 | 127 | | | | | | | | |
| YPNASLT | 1990 | YTLHVKSDLVN | 1843 | 137 | 0.0009 | | | | -0.0022 | | | |
| YPNASLT | 1991 | YTLHVKSDLVN | 1844 | 141 | 0.0021 | | | | -0.0022 | | | |
| YPNASLT | 1992 | YTLHVKSDLVN | 1845 | 146 | | | | | | | | |
| YPNASLT | 1993 | YTLHVKSDLVN | 1846 | 154 | | | | | | | | |
| YPNASLT | 1994 | YTLHVKSDLVN | 1847 | 176 | 8.4000 | 0.0830 | 0.0095 | 0.1300 | 5.6000 | | 0.7000 | |
| YPNASLT | 1995 | YTLHVKSDLVN | 1848 | 177 | 0.0230 | | | 0.0290 | | | | |
| YPNASLT | 1996 | YTLHVKSDLVN | 1849 | 197 | | | | | | | | |
| YPNASLT | 1997 | YTLHVKSDLVN | 1850 | 202 | | | | | | | | |
| YPNASLT | 1998 | YTLHVKSDLVN | 1851 | 218 | | | | | | | | |
| YPNASLT | 1999 | YTLHVKSDLVN | 1852 | 226 | | | | | | | | |
| YPNASLT | 2000 | YTLHVKSDLVN | 1853 | 231 | | | | | | | | |
| YPNASLT | 2001 | YTLHVKSDLVN | 1854 | 232 | | | | | | | | |
| YPNASLT | 2002 | YTLHVKSDLVN | 1855 | 239 | | | | | | | | |
| YPNASLT | 2003 | YTLHVKSDLVN | 1856 | 254 | | | | | | | | |
| YPNASLT | 2004 | YTLHVKSDLVN | 1857 | 268 | | | | | | | | |
| YPNASLT | 2005 | YTLHVKSDLVN | 1858 | 281 | | | | | | | | |
| YPNASLT | 2006 | YTLHVKSDLVN | 1859 | 282 | | | | | | | | |
| YPNASLT | 2007 | YTLHVKSDLVN | 1860 | 283 | | | | | | | | |
| YPNASLT | 2008 | YTLHVKSDLVN | 1861 | 286 | | | | | | | | |
| YPNASLT | 2009 | YTLHVKSDLVN | 1862 | 288 | | | | | | | | |
| YPNASLT | 2010 | YTLHVKSDLVN | 1863 | 305 | -0.0004 | | | | -0.0022 | | | |
| YPNASLT | 2011 | YTLHVKSDLVN | 1864 | 310 | | | | | | | | |
| YPNASLT | 2012 | YTLHVKSDLVN | 1865 | 315 | | | | | | | | |
| YPNASLT | 2013 | YTLHVKSDLVN | 1866 | 324 | -0.0004 | | | 0.0042 | -0.0022 | | | |
| YPNASLT | 2014 | YTLHVKSDLVN | 1867 | 332 | | | | 0.0054 | -0.0022 | | | |
| YPNASLT | 2015 | YTLHVKSDLVN | 1868 | 375 | 0.0210 | | | | -0.0022 | | | |
| YPNASLT | 2016 | YTLHVKSDLVN | 1869 | 380 | | | | | | | | |
| YPNASLT | 2017 | YTLHVKSDLVN | 1870 | 385 | | | | | | | | |
| YPNASLT | 2018 | YTLHVKSDLVN | 1871 | 392 | | | | | | | | |

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Table XIX
CEA DR Super Motif Peptides with

| Core Sequence | Core SeqID Num | Exemplary Sequence | Exemplary SeqID Num | Position | DR1 | DR2w01 | DR2w202 | DR3 | DR4w4 | DR4w15 | DR5w11 | DR5w12 |
|---------------|----------------|--------------------|---------------------|----------|---------|--------|---------|--------|---------|--------|---------|--------|
| LSVDHSDPV | 2019 | QNELSVVDHSDPVILN | 1872 | 396 | | | | 0.0820 | | | | |
| VHSDPVL | 2020 | ELSVHSDPVLNVL | 1873 | 398 | | | | | | | | |
| VHNLVGP | 2021 | SDPVLNVL YGPDIDP | 1874 | 404 | | | | | | | | |
| YGPDPDTIS | 2022 | NVL YGPDIDTISPY | 1875 | 410 | | | | | | | | |
| ISPYTYVR | 2023 | DPTISPYTYVRPGV | 1876 | 417 | | | | | | | | |
| YYRPGVNL | 2024 | SPSYTYRPGVNLSL | 1877 | 421 | | | | | | | | |
| YYRPGVNL | 2025 | SYTYRPGVNLSLSC | 1878 | 423 | | | | | | | | |
| VNLSLSCA | 2026 | PGVNLSLSCAASN | 1879 | 428 | | | | | | | | |
| LSCHAAASP | 2027 | NI SI SCHAAASPAP | 1880 | 432 | | | | | | | | |
| LIDGNIH | 2028 | YSWLDGNIHOOHTE | 1881 | 447 | | | | | | | | |
| LFINITEK | 2029 | TOELFINITEKNSG | 1882 | 459 | 0.0005 | | | | 0.0180 | | | |
| FISNTEKN | 2030 | OELFINITEKNSGL | 1883 | 460 | | | | | | | | |
| ISNTEKNSGL | 2031 | ISNTEKNSGLYTCO | 1884 | 464 | | | | | | | | |
| LYTCOANS | 2032 | NSGLYTCOANSASG | 1885 | 471 | | | | | | | | |
| VKTITVSAN | 2033 | RTTVKTITVSANLPL | 1886 | 488 | 0.0110 | 0.0250 | 0.0009 | 0.0010 | 0.0064 | | -0.0005 | |
| VSLELPKS | 2034 | TITVSANLPLKPSIS | 1887 | 493 | -0.0004 | | | | -0.0022 | | | |
| WANGOSLPV | 2035 | SAELPKPSSINNSK | 1888 | 497 | | | | | | | | |
| VANGOSLPV | 2036 | YLWVANGOSLPVSPR | 1889 | 532 | | | | | | | | |
| LTLENFTN | 2037 | LWVANGOSLPVSPRL | 1890 | 533 | | | | | | | | |
| VTRDARAY | 2038 | NRTLLENFTNDRAR | 1891 | 553 | | | | | | | | |
| IONSVSANR | 2039 | LFNVTRDARAYVCG | 1892 | 558 | | | | | | | | |
| VLDVLYLGP | 2040 | VCGONSVSANESDP | 1893 | 570 | | | | | | | | |
| YGPDTIHS | 2041 | ONSVSANESDPVTL | 1894 | 574 | | | | | | | | |
| ISPPDSYTL | 2042 | SDPVLVLYGPDTP | 1895 | 582 | | | | | | | | |
| LSCHASNP | 2043 | DVLYGPDTPILSPD | 1896 | 587 | -0.0004 | | | 0.0037 | -0.0022 | | | |
| WANGOSLPV | 2044 | TRUSPDSSVLSGA | 1897 | 595 | | | | | | | | |
| YGPDTIHS | 2045 | SSVLSGANLSCHS | 1898 | 603 | | | | | | | | |
| ISPPDSYTL | 2046 | NILSCHASNPSPPO | 1899 | 603 | | | | | | | | |
| WANGOSLPV | 2047 | QYWRNGPOOHTO | 1900 | 610 | | | | | | | | |
| YGPDTIHS | 2048 | INGPOOHTOVLFA | 1901 | 624 | | | | | | | | |
| ISPPDSYTL | 2049 | TOVLEAKITPNNGT | 1902 | 629 | 0.0820 | | | | 0.0037 | | | |
| WANGOSLPV | 2050 | OVLFAKITPNNGT | 1903 | 637 | 0.1200 | | | | 0.0240 | | | |
| YGPDTIHS | 2051 | VLFIAKITPNNGT | 1904 | 638 | | | | | | | | |
| ISPPDSYTL | 2052 | NGTYVACFVSNLATGR | 1905 | 639 | | | | | | | | |
| WANGOSLPV | 2053 | VACFVSNLATGRNNS | 1906 | 650 | 0.0240 | | | | 0.0270 | | | |
| YGPDTIHS | 2054 | NSNVKSTIVASGTS | 1907 | 653 | | | | | | | | |
| ISPPDSYTL | 2055 | NSNVKSTIVASGTS | 1908 | 654 | | | | | | | | |
| WANGOSLPV | 2056 | NSNVKSTIVASGTS | 1909 | 665 | 0.0550 | 0.0029 | -0.0007 | 0.1100 | 1.8000 | | 0.0016 | |
| YGPDTIHS | 2057 | VKSTIVASGTS | 1910 | 666 | 0.0640 | 0.0023 | -0.0007 | 0.0750 | 1.8000 | | 0.0012 | |
| ISPPDSYTL | 2058 | VKSTIVASGTS | 1911 | 669 | | | | | | | | |
| WANGOSLPV | 2059 | SPQLSAGTVGIMIG | 1912 | 671 | | | | | | | | |
| YGPDTIHS | 2060 | TVGHILSLVGVALL | 1913 | 680 | | | | | | | | |
| ISPPDSYTL | 2061 | TKLTIESTIVNVAE | 1914 | 688 | | | | | | | | |
| WANGOSLPV | 2062 | VSNTKGRNPNNGOI | 1915 | 33 | | | | | | | | |
| YGPDTIHS | 2063 | NSGLNLSCHAAASP | 1916 | 65 | | | | | | | | |
| ISPPDSYTL | 2064 | GOSLPVSPRLQLSNG | 1917 | 182 | | | | | | | | |
| WANGOSLPV | 2065 | | 1918 | 252 | | | | | | | | |
| YGPDTIHS | 2066 | | 1919 | 538 | | | | | | | | |

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Table XIX CEA DR Super Motif Peptides with Binding

| Core Sequence | Core SeqID Num | Exemplary Sequence | Exemplary SeqID Num | DR6w19 | DR7 | DR8w2 | DR9 | DRw33 |
|---------------|----------------|--------------------|---------------------|--------|---------|---------|-----|-------|
| IPWQRLLIT | 1962 | RWCIPWQRLLITASL | 1815 | 0.0110 | 0.0700 | -0.0004 | | |
| WQRLLITA | 1963 | CIPWQRLLITASLT | 1816 | | | | | |
| LLLTASLT | 1964 | WQRLLITASLTTFW | 1817 | | | | | |
| LLTASLTTF | 1965 | QRLLITASLTTFWNP | 1818 | | -0.0013 | | | |
| LTASLTTF | 1966 | RLLTASLTTFWNP | 1819 | | | | | |
| LTFWNP | 1967 | ASLTTFWNPPTAKL | 1820 | | | | | |
| LTFWNP | 1968 | LLTFWNPPTAKLTI | 1821 | | | | | |
| WNPPTAK | 1969 | LTFWNPPTAKLTIE | 1822 | | | | | |
| LTIESP | 1970 | TAKLTIESPNAE | 1823 | | | | | |
| LLVHNP | 1971 | EVLLVHNPQLHFG | 1824 | 3.4000 | 0.4700 | 0.1200 | | |
| LVHNP | 1972 | VLLLVHNPQLHFGY | 1825 | | | | | |
| YKGERV | 1973 | YSWYKGERVGNRQ | 1826 | | | | | |
| IGYVIGTQ | 1974 | NRQIGYVIGTQAT | 1827 | | | | | |
| IGTQATPG | 1975 | GYVIGTQATPGPAY | 1828 | | | | | |
| YSGREIIP | 1976 | GPAYSGREIIPNAS | 1829 | | | | | |
| IYPNASLL | 1977 | GREIIPNASLLQN | 1830 | 1.2000 | 0.5600 | 0.0083 | | |
| IYPNASLIQ | 1978 | REIIPNASLIQNI | 1831 | | | | | |
| LIQNIQ | 1979 | EIIPNASLIQNIH | 1832 | 0.3100 | 0.1600 | 0.0029 | | |
| LIQNIQ | 1980 | NASLIQNIQNDTG | 1833 | | -0.0013 | | | |
| LIQNIQ | 1981 | ASLIQNIQNDTGF | 1834 | | | | | |
| LIQNDTGF | 1982 | IQNIQNDTGFYTLH | 1835 | | | | | |
| FYTLHVK | 1983 | DTGFYTLHVKSDLV | 1836 | | | | | |
| FYTLHVKSD | 1984 | TGFYTLHVKSDLVN | 1837 | | | | | |
| FYTLHVKSDLV | 1985 | FYTLHVKSDLVNEE | 1838 | | | | | |
| VKSDLVNEE | 1986 | TLHVKSDLVNEEAT | 1839 | | | | | |
| IKSDLVNEE | 1987 | LHVKSDLVNEEATG | 1840 | | | | | |
| LVNEEATG | 1988 | KSDLVNEEATGQFRV | 1841 | | | | | |
| VNEEATGQ | 1989 | SDLVNEEATGQFRVY | 1842 | | | | | |
| VPELPKP | 1990 | QFRVPELPKPSISS | 1843 | | -0.0013 | | | |
| PKPSISSN | 1991 | YPELPKPSISSNNSK | 1844 | | 0.0033 | | | |
| ISSNSKPV | 1992 | KPSISSNSKPVEDK | 1845 | | | | | |
| VEDKAVA | 1993 | SKPVEDKDAVAFCE | 1846 | | | | | |
| WVNNQSLP | 1994 | YLWWVNNQSLPVSP | 1847 | | | | | |
| VNNQSLPV | 1995 | LWWVNNQSLPVSPR | 1848 | | | | | |
| LTFLNVT | 1996 | NRTLFLNVTNDTA | 1849 | | | | | |
| VTRNDTAS | 1997 | LPNVTNDTASYKE | 1850 | | | | | |
| VSARRSDS | 1998 | QNPVSARRSDSVILN | 1851 | | | | | |
| VILNVLYGP | 1999 | SDSVILNVLYGPDAP | 1852 | | | | | |
| LYGPDAPT | 2000 | LNVLYGPDAPTISPL | 1853 | | | | | |
| YGPDAFTIS | 2001 | NVLYGPDAPTISPLN | 1854 | | | | | |
| ISPLNTSYR | 2002 | APTISPLNTSYRSGE | 1855 | | | | | |
| LSCHAASN | 2003 | NLNLSCHAASNPPAQ | 1856 | | | | | |
| WFVNGTGFQ | 2004 | QYSWFVNGTGFQOST | 1857 | | | | | |
| LFIPNITVN | 2005 | TOELFIPNITVNNSG | 1858 | | | | | |
| FIPNITVNN | 2006 | QELFIPNITVNNSGS | 1859 | | | | | |
| IPNITVNN | 2007 | ELFIPNITVNNSGSY | 1860 | | | | | |

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Table XIX CEA DR Super Motif Peptides with Binding

| Core Sequence | Core SeqID Num | Exemplary Sequence | Exemplary SeqID Num | DR6w19 | DR7 | DR8w2 | DR9 | DRw53 |
|---------------|----------------|--------------------|---------------------|---------|--------|---------|-----|-------|
| ITVNSGSY | 2008 | IPNITVNSGSYTCQ | 1861 | | | | | |
| VNNSGSYT | 2009 | NITVNSGSYTCQAH | 1862 | | | | | |
| LNRTVTI | 2010 | DTGLNRTVTITIVY | 1863 | 0.0088 | | | | |
| VTTITVYAE | 2011 | RTTIVTTITVYAEPPK | 1864 | | | | | |
| VYAEPPKP | 2012 | TITVYAEPPKPITS | 1865 | -0.0013 | | | | |
| ITSNSNPV | 2013 | KPITSNSNPVEDE | 1866 | | | | | |
| VEDEDAVA | 2014 | SNPVEDEDAVALTCE | 1867 | | | | | |
| VTLNLSVTR | 2015 | NRTLTLNLSVTRNDVG | 1868 | 0.0021 | | | | |
| VRNDVGP | 2016 | LLSVTRNDVGPYECG | 1869 | | | | | |
| VGPYECGI | 2017 | RNDVGPYECGQNEL | 1870 | | | | | |
| IQNELSVOH | 2018 | ECGQNELSVHDSDP | 1871 | | | | | |
| LSVDHSDP | 2019 | QNELSVHDSDPVILN | 1872 | | | | | |
| VDHSDPVIL | 2020 | ELSVHDSDPVILNVL | 1873 | | | | | |
| VILNVLGYP | 2021 | SDPVILNVL YGPDPP | 1874 | | | | | |
| YGPDDPTS | 2022 | NVL YGPDPTSISY | 1875 | | | | | |
| ISPSYTYR | 2023 | DPTSISYTYRPGV | 1876 | | | | | |
| YTYRPGV | 2024 | SPSYTYRPGVNL | 1877 | | | | | |
| YYRPGVNL | 2025 | SYTYRPGVNL | 1878 | | | | | |
| VNLSLSCH | 2026 | RPVNLNLSLSCH | 1879 | | | | | |
| LSCHAAAN | 2027 | NLSLSCHAAANPPAQ | 1880 | | | | | |
| LIDGNIQOH | 2028 | YSLIDGNIQOHTOE | 1881 | | | | | |
| LHFNITEK | 2029 | QELFISNITEKNSG | 1882 | -0.0013 | | | | |
| FISNITEKN | 2030 | QELFISNITEKNSGL | 1883 | | | | | |
| ITEKNSGLY | 2031 | ISNITEKNSGLYTCQ | 1884 | | | | | |
| LYTCOANN | 2032 | NSGLYTCOANNAS | 1885 | | | | | |
| VKITVSAE | 2033 | RITVKITVSAELPK | 1886 | 0.0050 | 0.0790 | -0.0004 | | |
| VSAELPKP | 2034 | TITVSAELPKPSISS | 1887 | | | | | |
| LPKPSISSN | 2035 | SAELPKPSISSNSK | 1888 | -0.0013 | | | | |
| WVNGQSLP | 2036 | YLWVNGQSLPVSP | 1889 | | | | | |
| VNGQSLPV | 2037 | LWVNGQSLPVSPR | 1890 | | | | | |
| LTFLNVTNR | 2038 | NRTLTLNVTNRDAR | 1891 | | | | | |
| VTRNDARA | 2039 | LFNVTNRDARAYVC | 1892 | | | | | |
| IQNSVSAN | 2040 | VCGIQNSVSANRSDP | 1893 | | | | | |
| VSANRSDP | 2041 | QNSVSANRSDPVTL | 1894 | | | | | |
| VTLDLVLYG | 2042 | SDPVTLDLVLYGPDTP | 1895 | | | | | |
| LYGPDTPII | 2043 | LDVLVLYGPDTPISPP | 1896 | | | | | |
| YGPDTPIIS | 2044 | DVLVLYGPDTPISPPD | 1897 | -0.0013 | | | | |
| ISPPDSSYL | 2045 | THISPPDSSYLSGA | 1898 | | | | | |
| LSGANLNL | 2046 | SSYLSGANLNL | 1899 | | | | | |
| LSCHASN | 2047 | NLNLNLSCHASNPSQ | 1900 | | | | | |
| WRINGIPQ | 2048 | QYSWRINGIPQHTQ | 1901 | | | | | |
| IPQHTQVL | 2049 | INGIPQHTQVLFIA | 1902 | | | | | |
| LFIKAITPN | 2050 | TOVLFIKAITPNNG | 1903 | 0.0038 | | | | |
| FIKAITPN | 2051 | QVLFIKAITPNNGT | 1904 | 0.0024 | | | | |
| IAKITPN | 2052 | VLFIAKITPNNGT | 1905 | | | | | |
| YACFVSNL | 2053 | NGTYACFVSNLATG | 1906 | | | | | |

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Table XIX CEA DR Super Motif Peptides with Binding

| Core Sequence | Core SeqID Num | Exemplary Sequence | Exemplary SeqID Num | DR6w19 | DR7 | DR8w2 | DR9 | DRw53 |
|---------------|----------------|--------------------|---------------------|--------|--------|--------|-----|-------|
| FVSNLATG | 2054 | YACFVSNLATGRNN | 1907 | | 0.0070 | | | |
| VSNLATGR | 2055 | ACFVSNLATGRNNSI | 1908 | | | | | |
| IVKSITVSA | 2056 | NNSIVKSITVSAAGT | 1909 | 0.0690 | 0.0370 | 0.0120 | | |
| VKSITVSA | 2057 | NSIVKSITVSAAGTS | 1910 | 0.0460 | 0.0760 | 0.0170 | | |
| ITVSAAGTS | 2058 | VKSITVSAAGTSFGL | 1911 | | | | | |
| VSAAGTS | 2059 | SITVSAAGTSFGLSA | 1912 | | | | | |
| LSAGATVGI | 2060 | SPGLSAGATVGMIG | 1913 | | | | | |
| IMIGLVGV | 2061 | TVGMIGVLGVALLI | 1914 | | | | | |
| LTISTPFN | 2062 | TAKLTISTPFNVAE | 1915 | | | | | |
| YKGERVDG | 2063 | YSWYKGERVDGNRQ | 1916 | | | | | |
| LPVSPRLQ | 2064 | NSLPSVSPRLQSLNG | 1917 | | | | | |
| LNLSCAA | 2065 | GENLNLSCAAASNP | 1918 | | | | | |
| LPVSPRLQ | 2066 | GQSLPSVSPRLQSLNG | 1919 | | | | | |

(See ID no. 1)

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m.wed 8/20/00
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CEA DR 3a Motif Peptides with Binding

| Core Sequence | Core SeqID Num | Exemplary Sequence | Table XXa | Exemplary SeqID Num | Position | DR1 | DR2w281 | DR2w282 | DR3 | DR4w4 | DR4w15 | DR5w11 | DR5w12 |
|---------------|----------------|--------------------|-----------|---------------------|----------|--------|---------|---------|---------|---------|--------|--------|--------|
| IQNDTGFT | 2067 | QNIQNDTGFTLHV | 1920 | 110 | 0.0044 | 0.0105 | - | 0.3200 | -0.0055 | -0.0008 | - | - | - |
| IKSDLVNEE | 2068 | LHVIKSDLVNEEATG | 1921 | 122 | - | - | - | 0.1300 | - | - | - | - | - |
| LVNEEATGO | 2069 | KSDLVNEEATGOFRV | 1922 | 126 | - | - | - | 0.0058 | - | - | - | - | - |
| VNEEATGOF | 2070 | SDLVNEEATGOFRV | 1923 | 127 | - | - | - | - | - | - | - | - | - |
| VYPELPKPS | 2071 | QFRVYPELPKPSISS | 1924 | 137 | - | - | - | - | - | - | - | - | - |
| FTCEPETQD | 2072 | AVAFTECEPETQDATY | 1925 | 162 | - | - | - | - | - | - | - | - | - |
| YKCEQNPV | 2073 | TASYKCEQNPVSAR | 1926 | 210 | - | - | - | - | - | - | - | - | - |
| YGPDAPTIS | 2074 | NVL YGPDAPTISPLN | 1927 | 232 | - | - | - | - | - | - | - | - | - |
| VYAEPPKPF | 2075 | TITVYAEPPKPFITS | 1928 | 315 | - | - | - | 0.0042 | - | - | - | - | - |
| VEDEDAVAL | 2076 | SNPVEDEDAVALTCE | 1929 | 332 | - | - | - | 0.0054 | - | - | - | - | - |
| LTCEPEIQN | 2077 | AVALTCEPEIQNTTY | 1930 | 340 | - | - | - | 0.0039 | - | - | - | - | - |
| IQNELSVDH | 2078 | ECGIQNELSVDHSDP | 1931 | 392 | - | - | - | - | 0.0820 | - | - | - | - |
| LSVDHSDPV | 2079 | QNELSVDHSDPVLIN | 1932 | 396 | - | - | - | - | - | - | - | - | - |
| YGPDDPTIS | 2080 | NVL YGPDPTISPSY | 1933 | 410 | - | - | - | - | - | - | - | - | - |
| VSALPKPS | 2081 | TITVSAELPKPSISS | 1934 | 493 | - | - | - | - | - | - | - | - | - |
| FTCEPEAQN | 2082 | AVAFTECEPEAQNTTY | 1935 | 518 | - | - | - | - | - | - | - | - | - |
| VTLDVLYGP | 2083 | SDPVTLDVLYGFDTP | 1936 | 582 | - | - | - | - | - | - | - | - | - |
| YGPDTPIIS | 2084 | DVLYGPDTPISPPD | 1937 | 588 | - | - | - | 0.0037 | - | - | - | - | - |

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CEA DR 3a Motif Peptides with Binding Data

| Table XXa | | CEA DR 3a Motif Peptides with Binding Data | | | | | | | | | | |
|---------------|---------------------|--|---------------------|--------|---------|---------|--|--------|-----|-------|-----|-------|
| Core Sequence | Exemplary SeqID Num | Core SeqID Num | Exemplary SeqID Num | | | | | DR6w19 | DR7 | DR8w2 | DR9 | DRw53 |
| | | | SeqID Num | | | | | | | | | |
| IQNDTGFTY | 2067 | QNIQNDTGFTYTLHV | 1920 | 0.3600 | -0.0017 | -0.0009 | | | | | | |
| IKSDLVNEE | 2068 | LHVIKSDLVNEEATG | 1921 | | | | | | | | | |
| LVNEEATGO | 2069 | KSDLVNEEATGOFRV | 1922 | | | | | | | | | |
| VNEEATQOF | 2070 | SDLVNEEATGOFRVY | 1923 | | | | | | | | | |
| VYPPLPKPS | 2071 | QFRVYPPLPKPSISS | 1924 | | | | | | | | | |
| FTCEPETQD | 2072 | AVAFTEPETQDATY | 1925 | | | | | | | | | |
| YKCEQNPV | 2073 | TASYKCEQNPVSAR | 1926 | | | | | | | | | |
| YGPDAPTIS | 2074 | NVL YGPDAPTISPLN | 1927 | | | | | | | | | |
| VYAEPPKPF | 2075 | TITVYAEPPKPFITS | 1928 | | | | | | | | | |
| VEDEDAVAL | 2076 | SNPVEDEDAVALTCE | 1929 | | | | | | | | | |
| LTCEPEIQN | 2077 | AVALTCEPEIQNTTY | 1930 | | | | | | | | | |
| IQNELSVDH | 2078 | ECGIQNELSVDHSDP | 1931 | | | | | | | | | |
| LSVDHSDPV | 2079 | QNELSVDHSDPVILN | 1932 | | | | | | | | | |
| YGPDDPTIS | 2080 | NVL YGPDDPTISPSY | 1933 | | | | | | | | | |
| VSAELPKPS | 2081 | TITVSAELPKPSISS | 1934 | | | | | | | | | |
| FTCEPEAQN | 2082 | AVAFTEPEAQNTTY | 1935 | | | | | | | | | |
| VTLDVLYGP | 2083 | SDPVTLDVLYGPDTP | 1936 | | | | | | | | | |
| YGPDTPIIS | 2084 | DVL YGPDTPIISPPD | 1937 | | | | | | | | | |

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CEA DR 3b Motif Peptides with Binding Data

Table XXb

| Core Sequence | Core SeqID Num | Exemplary Sequence | Exemplary SeqID Num | Position | DR1 | DR2w:2B1 | DR2w:2B2 | DR3 | DR4w4 | DR4w15 | DR5w11 | DR5w12 |
|---------------|----------------|--------------------|---------------------|----------|---------|----------|----------|---------|---------|--------|---------|--------|
| ATGQRYVP | 2085 | NEEATGQFRVYPELP | 1938 | 131 | | | | -0.0027 | | | | |
| LNTSYRSGE | 2086 | ISPLNTSYRSGENLN | 1939 | 242 | | | | -0.0027 | | | | |
| YTCQAHNSD | 2087 | SGSYTCQAHNSDTGL | 1940 | 294 | | | | -0.0027 | | | | |
| LPVSRLOL | 2088 | NQSLPVSRLOLSND | 1941 | 360 | | | | 0.0071 | | | | |
| LSNDNRTL | 2089 | RQLSNDNRTLILLS | 1942 | 368 | | | | 0.3200 | -0.0055 | | -0.0008 | |
| LSLSCHAS | 2090 | GVNLSLSCHAAASNP | 1943 | 430 | 0.0001 | -0.0006 | -0.0007 | 0.0075 | | | | |
| LNLSCHAS | 2091 | GANLNLSCHASNP | 1944 | 608 | | | | -0.0027 | | | | |
| ASPETHLDM | 2092 | RLPASPEHLDMLRH | 1945 | 34 | | | | -0.0027 | | | | |
| AHNOVRQVP | 2093 | VLIAHNOVRQVPQOR | 1946 | 84 | | | | 0.0290 | | | | |
| LIDNRSRA | 2094 | ALTIDNRSRACHIP | 1947 | 180 | | | | 0.0350 | | | | |
| IHNTHLCF | 2095 | LALIHNTHLFCVHT | 1948 | 465 | 0.0140 | 0.0590 | 0.0009 | 0.3100 | -0.0055 | | 0.0025 | |
| LFERNHQAL | 2096 | WQQLERNHQALLHT | 1949 | 482 | -0.0001 | 0.0015 | -0.0007 | 0.9000 | -0.0055 | | -0.0008 | |
| VDLDDKGP | 2097 | HSCVDLDDKGPAAEQ | 1950 | 632 | | | | -0.0027 | | | | |
| YLEDVRLVH | 2098 | GMSYLEDVRLVHRDL | 1951 | 832 | | | | 0.1800 | | | | |
| IDSECRPF | 2099 | CWMIDSECRPFREL | 1952 | 958 | 0.0036 | -0.0006 | 0.0150 | 0.4500 | -0.0055 | | -0.0008 | |
| AAQPPHPP | 2100 | OGCAAQPPHPPAFS | 1953 | 1200 | | | | -0.0025 | | | | |
| AAASRKMYE | 2101 | EFQAAASRKMYELVH | 1954 | 104 | | | | 0.0039 | | | | |
| LHHTLKIGG | 2102 | VKYLHHTLKIGGEPH | 1955 | 284 | | | | -0.0025 | | | | |
| IGGEPHISY | 2103 | TLKIGGEPHISYPL | 1956 | 290 | | | | -0.0025 | | | | |
| AAASRRVAE | 2104 | EFQAAASRRVAELVH | 1957 | 104 | | | | 0.0027 | | | | |
| ILGDPKLL | 2105 | EDSILGDPKLLTQH | 1958 | 235 | | | | 0.6700 | -0.0055 | | | |
| YKQSQHMT | 2106 | MAIYKQSQHMTFVR | 1959 | 160 | 0.0003 | -0.0006 | -0.0010 | -0.0025 | | | -0.0008 | |
| VEGNLRVEY | 2107 | LIRVEGNLRVEYLD | 1960 | 194 | | | | 0.0930 | | | | |
| FTLQIRGE | 2108 | GEYFTLQIRGERFE | 1961 | 325 | | | | 0.0290 | | | | |

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Table XXb
CEA DR 3b Motif Peptides with Binding Data

| Core Sequence | Core SeqID Num | Exemplary Sequence | Exemplary SeqID Num | DR6w19 | DR7 | DR8w2 | DR9 |
|---------------|----------------|--------------------|---------------------|----------|---------|---------|-----|
| ATGQFRVYP | 2085 | NEEATGQFRVYPHELP | 1938 | | | | |
| LNTSYRSGE | 2086 | ISPLNTSYRSGENLN | 1939 | | | | |
| YTQCAHNSD | 2087 | SGSYTQCAHNSDTGL | 1940 | | | | |
| LPYSRLQL | 2088 | NOSLPYSRLQLSND | 1941 | | | | |
| LSNDKRLTL | 2089 | RLOLSNDKRLTLIS | 1942 | | | | |
| LSLSCHAAS | 2090 | GVNLSLSCHAASNPP | 1943 | 0.0048 | -0.0017 | -0.0009 | |
| LNLSCHAS | 2091 | GANLNLSCHASNPS | 1944 | | | | |
| ASPETHLDM | 2092 | RLPASPEETHLDMLRH | 1945 | | | | |
| AHQVQRVPP | 2093 | VLIAHQVQRVPPQOR | 1946 | | | | |
| LIDTNRSKA | 2094 | ALTIDTNRSKACP | 1947 | | | | |
| IHNTHLCF | 2095 | LALIHNTHLCFYHT | 1948 | | | | |
| LFRNPHQAL | 2096 | WDQLFRNPHQALLHT | 1949 | | | | |
| VDLDDKGP | 2097 | HSCVDLDDKGPAPQ | 1950 | 0.7500 | 0.0200 | 0.0330 | |
| YLEDVRLVH | 2098 | GMSYLEDVRLVHRDL | 1951 | 0.0410 | -0.0017 | -0.0009 | |
| IDSECRPF | 2099 | CWMIDSECRPFREL | 1952 | (0.0001) | -0.0014 | 0.0028 | |
| AAQPHPPP | 2100 | QGGAAQPHPPAFS | 1953 | | | | |
| AAISRKIVE | 2101 | EFOAAISRKIMVELVH | 1954 | | | | |
| LHHTLKIGG | 2102 | VKVLHHTLKIGGEPI | 1955 | | | | |
| IGGEPIHIV | 2103 | TLKIGGEPIHISYPL | 1956 | | | | |
| AAISRKVAE | 2104 | EFOAAISRKVAELVH | 1957 | | | | |
| ILDPPKLL | 2105 | EDSILDPPKLLTOH | 1958 | 0.0130 | -0.0014 | 0.0029 | |
| YKQSQHMTIE | 2106 | MATYKQSQHMTIEYR | 1959 | | | | |
| VEGNLURVEY | 2107 | LIRVEGNLURVEYDD | 1960 | | | | |
| FTLQIRGRE | 2108 | GEYFTLQIRGRERFE | 1961 | | | | |

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Table XXII. Cr ss-reactive binding of CEA analog peptides

| Source | AA | Sequence | SEQ ID NO: | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | No. A2 Alleles Bound |
|------------|----|------------|------------|-----------|-----------|-----------|-----------|-----------------|----------------------|
| CEA.24 | 9 | LLTFWNPPPT | 2144 | 179 | 1720 | 67 | 755 | -- ² | 2 |
| CEA.24M2V9 | 9 | LMTFWNPPV | 2145 | 4.5 | 782 | 7.7 | 34 | 3333 | 3 |
| CEA.24V9 | 9 | LLTFWNPPV | 2146 | 16 | 307 | 26 | 56 | 952 | 4 |
| CEA.78 | 9 | QIIGYVIGT | 2147 | 313 | 148 | 106 | 100 | 150 | 5 |
| CEA.78L2V9 | 9 | QLIGYVIGV | 2158 | 9.4 | 5.9 | 2.3 | 21 | 2.3 | 5 |
| CEA.233 | 10 | VLYGPDAPTI | 2149 | 128 | 606 | 270 | 804 | -- | 2 |
| CEA.233V10 | 10 | VLYGPDAPTV | 2150 | 26 | 430 | 16 | 206 | 952 | 4 |
| CEA.411 | 10 | VLYGPDDPTI | 2151 | 294 | 358 | 476 | 7400 | -- | 3 |
| CEA.411V10 | 10 | VLYGPDDPTV | 2152 | 161 | 105 | 91 | 2467 | -- | 3 |
| CEA.569 | 9 | YVCGIQNSV | 2153 | 98 | 358 | 159 | 80 | 181 | 5 |
| CEA.569L2 | 9 | YLCGIQNSV | 2154 | 50 | 24 | 12 | 31 | 3478 | 4 |
| CEA.589 | 9 | VLYGPDPTI | 2155 | 200 | 878 | 53 | 638 | -- | 2 |
| CEA.589V9 | 9 | VLYGPDPTV | 2156 | 20 | 165 | 91 | 154 | 9756 | 4 |
| CEA.605 | 9 | YLSGANLNL | 2157 | 28 | 165 | 2.4 | 804 | -- | 3 |
| CEA.605V9 | 9 | YLSGANLNV | 2158 | 73 | 13 | 13 | 80 | 1600 | 4 |
| CEA.687 | 9 | ATVGIMIGV | 2159 | 36 | 8.8 | 20 | 11 | 0.80 | 5 |
| CEA.687L2 | 9 | ALVGIMIGV | 2160 | 10 | 63 | 31 | 100 | 102 | 5 |
| CEA.691 | 9 | IMIGVLGV | 2161 | 69 | 62 | 13 | 106 | 89 | 5 |
| CEA.691L2 | 9 | ILIGVLGV | 2162 | 22 | 8.0 | 3.2 | 16 | 160 | 5 |

1) Wild-type peptides presented for reference purposes.

2) -- indicates binding affinity = 10,000nM.



TABLE XXII A A01 Analog Peptides

| Peptide | AA | Sequence | SEQ ID NO: | Source | A*0101 nM |
|---------|----|-------------|------------|------------|-----------|
| 52.0105 | 11 | RVDGNRQIIGY | 2163 | CEA.72 | 294.1 |
| 52.0109 | 11 | RSDSVILNVLY | 2164 | CEA.225 | 47.2 |
| 52.0113 | 11 | HSDPVILNVLY | 2165 | CEA.403 | 25.8 |
| 52.0116 | 11 | RSDPVTLDVLY | 2166 | CEA.581 | 7.8 |
| 57.0004 | 9 | QQDTPGPAY | 2167 | CEA.87.D3 | 56.8 |
| 57.0007 | 9 | AADNPPAQY | 2168 | CEA.261.D3 | 45.5 |
| 57.0008 | 9 | ITDNNSGSY | 2169 | CEA.289.D3 | 96.2 |
| 57.001 | 9 | VTDNDVGPY | 2170 | CEA.383.D3 | 4.1 |
| 57.0011 | 9 | PTDSPSYTY | 2171 | CEA.418.D3 | 37.9 |
| 57.0012 | 9 | TIDPSYTTY | 2172 | CEA.419.D3 | 3.1 |
| 57.0013 | 9 | AADNPPAQY | 2173 | CEA.439.D3 | 44.6 |
| 57.0014 | 9 | ITDKNSGLY | 2174 | CEA.467.D3 | 11.9 |
| 57.0103 | 10 | PTDSPLNTSY | 2175 | CEA.240.D3 | 266 |
| 57.0104 | 10 | PTDSPSYTTY | 2176 | CEA.418.D3 | 1.1 |
| 57.0105 | 10 | HTASNPSPQY | 2177 | CEA.616.T2 | 131.6 |
| 57.0106 | 10 | HSDSNPSPQY | 2178 | CEA.616.D3 | 44.6 |

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added



Table XXII B A03 Analog Peptides

| Peptide | AA | Sequence | SEQ ID NO: | Source | A*0301 nM | A*1101 nM | A*3101 nM | A*3301 nM | A*6801 nM | A3 XRN |
|---------|----|-------------|------------|----------------|-----------|-----------|-----------|-----------|-----------|--------|
| 1371.01 | 10 | TVSPLNTSYR | 2179 | CEA.241.V2 | 458.3 | 54.5 | 187.5 | 557.7 | 8.7 | 4 |
| 1371.02 | 10 | TVSPLNTSYK | 2180 | CEA.241.V2K10 | 16.9 | 6.3 | 10588.2 | -48333.3 | 7.3 | 3 |
| 1371.03 | 10 | RVLTLTSSVTR | 2181 | CEA.376.V2 | 343.8 | 222.2 | 11.3 | 6041.7 | 666.7 | 3 |
| 1371.04 | 10 | RVLTLTSSVTK | 2182 | CEA.376.V2K10 | 37.9 | 50 | 163.6 | -72500 | 5714.3 | 3 |
| 1371.05 | 10 | TVSPSYTYR | 2183 | CEA.419.V2 | 2340.4 | 3000 | 29 | 263.6 | 8.6 | 3 |
| 1371.06 | 10 | TVSPSYTYK | 2184 | CEA.419.V2K10 | 68.8 | 42.9 | 3673.5 | 26363.6 | 6.7 | 3 |
| 1371.07 | 9 | IVPSYTYR | 2185 | CEA.420.V2 | 91.7 | 13.3 | 25.7 | 58 | 2.6 | 5 |
| 1371.08 | 9 | IVPSYTYK | 2186 | CEA.420.V2K9 | 17.2 | 54.5 | 720 | 4328.4 | 21.6 | 3 |
| 1371.09 | 10 | RVLTLFNVTR | 2187 | CEA.554.V2 | 297.3 | 93.8 | 9 | 7631.6 | 42.1 | 4 |
| 1371.1 | 10 | RVLTLFNVTK | 2188 | CEA.554.V42K10 | 20.8 | 31.6 | 233.8 | 41428.6 | 2352.9 | 3 |
| 1371.13 | 9 | FVSNLATGK | 2189 | CEA.656.K9 | 1466.7 | 206.9 | -36000 | -72500 | 5.3 | 2 |

addd



Table XXII C A24 Analog Peptides

| Peptide | AA | Sequence | SEQ ID NO: | Source | A*2401 nM |
|---------|----|-------------|------------|--------------|-----------|
| 52.0033 | 8 | IYPNASLL | 2190 | CEA.101 | 176.5 |
| 52.0038 | 8 | SWFVNGTF | 2191 | CEA.270 | 480 |
| 52.0137 | 11 | RWCIPWQRLLL | 2192 | CEA.10 | 151.9 |
| 52.0138 | 11 | PWQRLLLTASL | 2193 | CEA.14 | 324.3 |
| 52.0141 | 11 | FYTLHVIKSDL | 2194 | CEA.119 | 480 |
| 52.0142 | 11 | TYLWWVNNQSL | 2195 | CEA.175 | 85.7 |
| 52.0144 | 11 | TYLWWVNNQSL | 2196 | CEA.353 | 46.2 |
| 52.0145 | 11 | SYTYRPGVNL | 2197 | CEA.423 | 218.2 |
| 52.0146 | 11 | TYYRPGVNLSL | 2198 | CEA.425 | 131.9 |
| 52.0147 | 11 | TYLWWVNGQSL | 2199 | CEA.531 | 92.3 |
| 57.0036 | 9 | RYCIPWQRF | 2200 | CEA.10.Y2F9 | 190.5 |
| 57.0037 | 9 | IYPNASLLF | 2201 | CEA.101.F9 | 2.2 |
| 57.0038 | 9 | LYWVNNQSF | 2202 | CEA.177.Y2F9 | 63.2 |
| 57.0039 | 9 | LYGPDAPTF | 2203 | CEA.234.F9 | 63.2 |
| 57.0041 | 9 | TYYRPGVNF | 2204 | CEA.425.F9 | 52.2 |
| 57.0042 | 9 | LYWVNGQSF | 2205 | CEA.533.Y2F9 | 15.8 |
| 57.0044 | 9 | QYSWRINGF | 2206 | CEA.624.F9 | 109.1 |
| 57.0045 | 9 | TYACFVSNF | 2207 | CEA.652.F9 | 8.6 |
| 57.0072 | 10 | RYCIPWQRLF | 2208 | CEA.10.Y2F10 | 26.1 |
| 57.0073 | 10 | FYNPPTTAKF | 2209 | CEA.27.Y2F10 | 181.8 |
| 57.0074 | 10 | VYPELPKPSF | 2210 | CEA.140.F10 | 106.2 |
| 57.0075 | 10 | TYQQSTQELF | 2211 | CEA.276.Y2 | 307.7 |
| 57.0076 | 10 | VYAEPKPF | 2212 | CEA.318.F10 | 26.7 |
| 57.0077 | 10 | YYRPGVNLSF | 2213 | CEA.426.F10 | 10 |
| 57.0078 | 10 | QYSWLIDGNF | 2214 | CEA.446.F10 | 60 |
| 57.0079 | 10 | SYLSGANLNF | 2215 | CEA.604.F10 | 10 |

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adrenal



Table XXIII. Immunogenicity of A2 supermotif-bearing peptides

| Peptide | AA | Sequence | SEQ ID NO: | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | No. A2 Alleles Bound | CTL Peptide ¹ | CTL Wild-type | CTL Tumor |
|------------|----|------------|---------------|--------------|--------------|--------------|--------------|-----------------|----------------------------|-----------------------------|------------------|--------------|
| CEA.78 | 9 | QILGYVIGT | 2216 | 313 | 148 | 106 | 100 | 151 | 5 | | 0/3 | |
| CEA.354 | 10 | YLWWNNQSI | 2217 | 26 | 108 | 26 | 487 | 333 | 5 | | 1/2 | 0/1 |
| CEA.569 | 9 | YVCGIQNSV | 2218 | 98 | 358 | 159 | 80 | 182 | 5 | | 1/2 | 0/1 |
| CEA.605 | 9 | YLSGANLNL | 2219 | 28 | 165 | 2 | 804 | -- ² | 3 | | 2/2 | 1/2 |
| CEA.687 | 9 | ATVGIMIGV | 2220 | 36 | 9 | 20 | 11 | 1 | 5 | | 1/1 | 1/1 |
| CEA.691 | 9 | IMIGVLVGV | 2221 | 69 | 62 | 13 | 106 | 89 | 5 | | 8/8 | 4/7 |
| CEA.24 | 9 | LLTFWNPT | 2222 | 179 | 1720 | 67 | 755 | -- ² | 2 | | 0/1 | 0/1 |
| CEA.24V9 | 9 | LLTFWNPPV | 2223 | 16 | 307 | 26 | 56 | 952 | 4 | 1/1 | | 1/1 |
| CEA.233 | 10 | VLYGPDAPT | 2224 | 128 | 606 | 270 | 804 | -- | 2 | | 2/4 | 0/3 |
| CEA.233V10 | 10 | VLYGPDAPTV | 2225 | 26 | 430 | 16 | 206 | 952 | 4 | 3/4 | 2/2 | 1/4 |
| CEA.589 | 9 | VLYGPDTP | 2226 | 200 | 878 | 53 | 638 | -- | 2 | | 1/1 | 0/1 |
| CEA.589V9 | 9 | VLYGPDTPV | 2227 | 20 | 165 | 91 | 154 | 9756 | 4 | 2/2 | 2/2 | 0/2 |
| CEA.605 | 9 | YLSGANLNL | 2228 | 28 | 165 | 2.4 | 804 | -- | 3 | | 2/2 | 1/2 |
| CEA.605V9 | 9 | YLSGANLNV | 2229 | 73 | 13 | 13 | 80 | 1600 | 4 | 4/4 | 3/4 | 1/4 |

1) Number of donors yielding a positive response/total tested.

2) -- indicates binding affinity =10,000nM.

added



Table XXIV. MHC-peptide binding assays: cell lines and radiolabeled ligands.

| A. Class I binding assays | | | Radiolabeled peptide | | SEQ ID NO: |
|---------------------------|----------------|---------|-----------------------|----------------------------|--------------|
| Species | Antigen | Allele | Cell line | Source | Sequence |
| Human | A1 | A*0101 | Steinlin | Hu. J chain 102-110 | YTAVVPLVY |
| | A2 | A*0201 | JY | HBVc 18-27 F6->Y | FLPSDYPPSV |
| | A2 | A*0202 | P815 (transfected) | HBVc 18-27 F6->Y | FLPSDYPPSV |
| | A2 | A*0203 | FUN | HBVc 18-27 F6->Y | FLPSDYPPSV |
| | A2 | A*0206 | CLA | HBVc 18-27 F6->Y | FLPSDYPPSV |
| | A2 | A*0207 | 721.221 (transfected) | HBVc 18-27 F6->Y | FLPSDYPPSV |
| | A3 | | GM3107 | non-natural (A3CON1) | KVFPYALINK |
| | A11 | | BVR | non-natural (A3CON1) | KVFPYALINK |
| | A24 | A*2402 | KAS116 | non-natural (A24CON1) | AYIDNKNK |
| | A31 | A*3101 | SPACH | non-natural (A3CON1) | KVFPYALINK |
| | A33 | A*3301 | LWAGS | non-natural (A3CON1) | KVFPYALINK |
| | A28/68 | A*6801 | C1R | HBVc 141-151 T7->Y | STLPETYVRR |
| | A28/68 | A*6802 | AMAI | HBV pol 646-654 C4->A | FTQAGYPAL |
| | B7 | B*0702 | GM3107 | A2 sigal seq. 5-13 (L7->Y) | APRTLVL |
| | B8 | B*0801 | Steinlin | HIVgp 586-593 Y1->F, Q5->Y | FLKDYQLL |
| | B27 | B*2705 | LG2 | R 60s | FRYNGLIHR |
| | B35 | B*3501 | C1R, BVR | non-natural (B35CON2) | FPFKYAAAF |
| | B35 | B*3502 | TIS1 | non-natural (B35CON2) | FPFKYAAAF |
| | B35 | B*3503 | EHM | non-natural (B35CON2) | FPFKYAAAF |
| | B44 | B*4403 | PITOUT | EE-1 G6->Y | AEMGKYSFY |
| Mouse | B51 | B*5501 | KAS116 | non-natural (B35CON2) | FPFKYAAAF |
| | B53 | B*5301 | AMAI | non-natural (B35CON2) | FPFKYAAAF |
| | B54 | B*5401 | KT3 | non-natural (B35CON2) | FPFKYAAAF |
| | Cw4 | Cw*0401 | C1R | non-natural (C4CON1) | OYDDA VYKL |
| | Cw6 | Cw*0602 | 721.221 transfected | non-natural (C6CON1) | YRHDGGNVL |
| | Cw7 | Cw*0702 | 721.221 transfected | non-natural (C6CON1) | YRHDGGNVL |
| | D ^b | | EL4 | Adenovirus E1A P7->Y | SGPSNTYPEI |
| | K ^b | | EL4 | VSV NP 52-59 | RGYVFQGL |
| | D ^d | | P815 | HIV-IIIIB ENV G4->Y | RGPYRAFVTI |
| | K ^d | | P815 | non-natural (KdCON1) | KFNPMKTYI |
| | L ^d | | P815 | HBV's 28-39 | IPQSLDSYWTSL |
| | | | | | |



B. Class II binding assays

| Radiolabeled peptide | | | | Sequence | SEQ ID NO. |
|----------------------|-----------------|----------------------|------------------|------------------------|-------------------|
| Species | Antigen | Allele | Cell line | Source | |
| Human | DR1 | DRB1*0101 | LG2 | HA Y307-319 | YPKYVKQNTLKLAT |
| | DR2 | DRB1*1501 | L466.1 | MBP 88-102Y | VVHFKNIVTPRPY |
| | DR2 | DRB1*1601 | L242.5 | non-natural (760.16) | YAAFAAAKTAFAA |
| | DR3 | DRB1*0301 | MAT | MT 65KD Y3-13 | YKTIADDEARR |
| | DR4w4 | DRB1*0401 | Preiss | non-natural (717.01) | YARFOSQITLKQKT |
| | DR4w10 | DRB1*0402 | YAR | non-natural (717.10) | YARFOSQITLKAAA |
| | DR4w14 | DRB1*0403 | BIN 40 | non-natural (717.01) | YARFOSQITLKQKT |
| | DR4w15 | DRB1*0405 | KT3 | non-natural (717.01) | YARFOSQITLKQKT |
| | DR7 | DRB1*0701 | Pitout | Tet. tox. 830-843 | QYIKANSKFIGITE |
| | DR8 | DRB1*0802 | OLL | Tet. tox. 830-843 | QYIKANSKFIGITE |
| | DR8 | DRB1*0803 | LUY | Tet. tox. 830-843 | QYIKANSKFIGITE |
| | DR9 | DRB1*0901 | HID | Tet. tox. 830-843 | QYIKANSKFIGITE |
| | DR11 | DRB1*1101 | Sweig | Tet. tox. 830-843 | QYIKANSKFIGITE |
| | DR12 | DRB1*1201 | Herluf | unknown eluted peptide | EALHQLKINPYVLS |
| | DR13 | DRB1*1302 | H0301 | Tet. tox. 830-843 S->A | QYIKANAKFIGITE |
| | DR51 | DRB5*0101 | GM3107 or L416.3 | Tet. tox. 830-843 | QYIKANAKFIGITE |
| | DR51 | DRB5*0201 | L235.1 | HA 307-319 | PKYVKQNTLKLAT |
| | DR52 | DRB3*0101 | MAT | Tet. tox. 830-843 | NGQIGNDPNRDIL |
| | DR53 | DRB4*0101 | L257.6 | non-natural (717.01) | YARFOSQITLKQKT |
| | DQ3.1 | QA1*03:01/DQB1*03:01 | PF | non-natural (ROIV) | YAHAAHAAHAAHAAHAA |
| Mouse | IA ^b | | DB27.4 | non-natural (ROIV) | YAHAAHAAHAAHAAHAA |
| | IA ^d | | A20 | non-natural (ROIV) | YAHAAHAAHAAHAAHAA |
| | IA ^k | | CH-12 | HEL 46-61 | YNTDGDSTDYGLQINSR |
| | IA ^k | | LS102.9 | non-natural (ROIV) | YAHAAHAAHAAHAAHAA |
| | IA ^v | | 91.7 | non-natural (ROIV) | YAHAAHAAHAAHAAHAA |
| | IE ^d | | A20 | Lambda repressor 12-26 | YLEDARRKKAIYEKKK |
| | IE ^k | | CH-12 | Lambda repressor 12-26 | YLEDARRKKAIYEKKK |

← added



Table XXVI. Crossbinding data of A2 supermotif peptides.

| Source | AA | Sequence | SEQ ID NO: | A *0201 nM | A *0202 nM | A *0203 nM | A *0206 nM | A *6802 nM | No. A2 Alleles Crossbound |
|---------|----|------------|------------|---------------|---------------|---------------|---------------|---------------|---------------------------------|
| CEA.24 | 9 | LLTFWNPPT | 2288 | 179 | 1720 | 67 | 755 | -- | 2 |
| CEA.78 | 9 | QIIGYVIGT | 2289 | 313 | 148 | 106 | 100 | 150 | 5 |
| CEA.233 | 10 | VLYGPDAPTI | 2290 | 128 | 606 | 270 | 804 | -- | 2 |
| CEA.354 | 10 | YLWVYNNQSL | 2291 | 26 | 108 | 26 | 487 | 67 | 5 |
| CEA.411 | 10 | VLYGPDPTI | 2292 | 294 | 358 | 476 | 7400 | -- | 3 |
| CEA.432 | 9 | NLSLSCHAA | 2293 | 455 | 2867 | 1449 | 18500 | -- | 1 |
| CEA.532 | 10 | YLWVYNGQSL | 2294 | 33 | 331 | 21 | 2056 | 286 | 4 |
| CEA.569 | 9 | YVCGIQNSV | 2295 | 98 | 358 | 159 | 80 | 181 | 5 |
| CEA.589 | 9 | VLYGPDPTI | 2296 | 200 | 878 | 53 | 638 | -- | 2 |
| CEA.605 | 9 | YLSGANLNL | 2297 | 28 | 165 | 2.4 | 804 | -- | 3 |
| CEA.687 | 9 | ATVGIMIGV | 2298 | 36 | 8.8 | 20 | 11 | 0.80 | 5 |
| CEA.690 | 10 | GIMIGVLGV | 2299 | 64 | 205 | 31 | 142 | 500 | 5 |
| CEA.691 | 9 | IMIGVLGV | 2300 | 69 | 62 | 13 | 106 | 89 | 5 |
| CEA.691 | 10 | IMIGVLGVA | 2301 | 227 | 68 | 44 | 726 | 1509 | 3 |

-- indicates binding affinity = 10,000nM.

added



Table XXVII. Immunogenicity of A2 supermotif peptides

| Source | AA | Sequence | SEQ ID NO: | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | No. A2 Alleles Crossbound | CTL Wild-type - | CTL Tumor |
|---------|----|------------|------------|--------------|--------------|--------------|--------------|-----------------|---------------------------------|-----------------------|--------------|
| CEA.78 | 9 | QIIQYVIGT | 2302 | 313 | 148 | 106 | 100 | 151 | 5 | 0/3 | |
| CEA.354 | 10 | YLVWVNNQSL | 2303 | 26 | 108 | 26 | 487 | 333 | 5 | 1/2 | 0/1 |
| CEA.569 | 9 | YVCGIQNSV | 2304 | 98 | 358 | 159 | 80 | 182 | 5 | 1/2 | 0/1 |
| CEA.605 | 9 | YLSGANLNL | 2305 | 28 | 165 | 2.4 | 804 | -- ² | 3 | 2/2 | 1/2 |
| CEA.687 | 9 | ATVGIMIGV | 2306 | 36 | 8.8 | 20 | 11 | 0.80 | 5 | 1/1 | 1/1 |
| CEA.691 | 9 | IMIGVLVGV | 2307 | 69 | 62 | 13 | 106 | 89 | 5 | 8/8 | 4/7 |

1) Number of donors yielding a positive response/total tested.

2) -- indicates binding affinity = 10,000nM.

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Table XXVIII. Immunogenicity A2 supermotif analog peptides

| Source | AA | Sequence | SEQ ID NO: | A*0201 nM | A*0202 nM | A*0203 nM | A*0206 nM | A*6802 nM | No. A2 Alleles Crossbound | CTL Peptide ¹ | CTL Wild-type | CTL Tumor |
|------------|----|------------|---------------|--------------|--------------|--------------|--------------|-----------------|---------------------------------|-----------------------------|------------------|--------------|
| CEA.24 | 9 | LLTFWNPPT | 2308 | 179 | 1720 | 67 | 755 | -- ² | 2 | | 0/1 | 0/1 |
| CEA.24V9 | 9 | LLTFWNPV | 2309 | 16 | 307 | 26 | 56 | 952 | 4 | 1/1 | 1/1 | 1/1 |
| CEA.233 | 10 | VLYGPDAPTI | 2310 | 128 | 606 | 270 | 804 | -- | 2 | | 2/4 | 0/3 |
| CEA.233V10 | 10 | VLYGPDAPTV | 2311 | 26 | 430 | 16 | 206 | 952 | 4 | 3/4 | 2/2 | 1/4 |
| CEA.589 | 9 | VLYGPDPTI | 2312 | 200 | 878 | 53 | 638 | -- | 2 | | 1/1 | 0/1 |
| CEA.589V9 | 9 | VLYGPDTPV | 2313 | 20 | 165 | 91 | 154 | 9756 | 4 | 2/2 | 2/2 | 0/2 |
| CEA.605 | 9 | YLSGANLNL | 2314 | 28 | 165 | 2.4 | 804 | -- | 3 | | 2/2 | 1/2 |
| CEA.605V9 | 9 | YLSGANLNV | 2315 | 73 | 13 | 13 | 80 | 1600 | 4 | 4/4 | 3/4 | 1/4 |

1) Number of donors yielding a positive response/total tested.

2) -- indicates binding affinity = 10,000nM.



Table XXIX. DR supertype primary binding

| Peptide | DR147 Algo Sum | Sequence | SEQ ID NO: | Source | DR1 nM | DR4w4 nM | DR7 nM | DR147 Cross- reactivity |
|---------|----------------------|-----------------|---------------|---------|-----------|-------------|-----------|-------------------------------|
| 39.0217 | 2 | RWCIPWQRLLLTASL | 2316 | CEA.10 | 8.2 | 542 | 357 | 3 |
| 39.0218 | 3 | QRLLLTASLLTFWNP | 2317 | CEA.16 | -- | -- | -- | 0 |
| 39.0219 | 2 | EVLLLVHNLPHLFG | 2318 | CEA.50 | 2.0 | 52 | 53 | 3 |
| 39.0220 | 3 | GREIYPNASLLIQN | 2319 | CEA.97 | 8.1 | 484 | 45 | 3 |
| 39.0221 | 2 | EIIYPNASLLIQNII | 2320 | CEA.99 | 14 | 1154 | 156 | 2 |
| 39.0222 | 2 | NASLLIQNIIQNDTG | 2321 | CEA.104 | 4546 | -- | -- | 0 |
| 39.0223 | 3 | DTGFYTLHVIKSDLV | 2322 | CEA.116 | 69 | 1731 | 227 | 2 |
| 39.0224 | 2 | YPPEPKPSISSNNSK | 2323 | CEA.141 | 5556 | -- | -- | 0 |
| 39.0225 | 2 | KPSISSNNSKPVEDK | 2324 | CEA.146 | 2381 | -- | 7576 | 0 |
| 39.0226 | 3 | YLWWVNNQSLPVSPR | 2325 | CEA.176 | 0.59 | 8.0 | 42 | 3 |
| 39.0227 | 3 | LWVVNNQSLPVSPRL | 2326 | CEA.177 | 217 | 1552 | 3049 | 1 |
| 39.0228 | 2 | QYSWFVNGTFQQSTQ | 2327 | CEA.268 | 192 | 80 | 926 | 3 |
| 39.0229 | 2 | DTGLNRTTVTITVY | 2328 | CEA.305 | -- | -- | 2841 | 0 |
| 39.0230 | 2 | KPFITSNNSNPVEDE | 2329 | CEA.324 | -- | -- | -- | 0 |
| 39.0231 | 2 | NRTLTLLSVTRNDVG | 2330 | CEA.375 | 238 | -- | -- | 1 |
| 39.0232 | 2 | QELFISNITEKNSGL | 2331 | CEA.460 | -- | 2500 | -- | 0 |
| 39.0233 | 3 | RTTVKTITVSAELPK | 2332 | CEA.488 | 455 | 7031 | 317 | 2 |
| 39.0234 | 2 | SAELPKPSISSNNSK | 2333 | CEA.497 | -- | -- | -- | 0 |
| 39.0235 | 2 | LDVLYGPDTPHISPP | 2334 | CEA.587 | -- | -- | -- | 0 |
| 39.0236 | 2 | TQVLFIAKITPNNNG | 2335 | CEA.637 | 61 | -- | 6579 | 1 |
| 39.0237 | 2 | QVLFIAKITPNNNGT | 2336 | CEA.638 | 42 | 1875 | -- | 1 |
| 39.0238 | 3 | YACFVSNLATGRNNS | 2337 | CEA.653 | 208 | 1667 | 3571 | 1 |
| 39.0239 | 2 | NNSIVKSITVSASGT | 2338 | CEA.665 | 91 | 25 | 676 | 3 |
| 39.0240 | 3 | NSIVKSITVSASGTS | 2339 | CEA.666 | 78 | 25 | 329 | 3 |

-- indicates binding affinity =10,000nM.

added



Table XXX DR supertype crossbinding

| Peptide | Sequence | SEQ ID NO: | Source | DR1 nM | DR4w4 nM | DR7 nM | DR2w2B1 nM | DR2w2B2 nM | DR6w19 nM | DR5w11 nM | DR8w2 nM | DR147 Degen | Broad Degen (5/8) |
|---------|-----------------|------------|---------|-----------|-------------|-----------|---------------|---------------|--------------|--------------|-------------|----------------|-------------------------|
| 39.0217 | RWCIPWQRLLLTASL | 2340 | CEA.10 | 8.2 | 542 | 357 | 827 | -- | 318 | -- | -- | 3 | 5 |
| 39.0219 | EVLLLVHNLPOHLFG | 2341 | CEA.50 | 2.0 | 52 | 53 | 40 | -- | 1.0 | 588 | 408 | 3 | 7 |
| 39.0220 | GREIYPNASLLIQN | 2342 | CEA.97 | 8.1 | 484 | 45 | 24 | 8333 | 2.9 | 6897 | 5904 | 3 | 5 |
| 39.0221 | EIIYPNASLLIQNII | 2343 | CEA.99 | 14 | 1154 | 156 | 57 | -- | 11 | -- | -- | 2 | 4 |
| 39.0223 | DTGYTLHVKSIDL | 2344 | CEA.116 | 69 | 1731 | 227 | 506 | 800 | 3889 | 2500 | 790 | 2 | 5 |
| 39.0226 | YLWWVNNQSLPVSPR | 2345 | CEA.176 | 0.60 | 8.0 | 42 | 110 | 2105 | 2.3 | 29 | 1065 | 3 | 6 |
| 39.0228 | QYSWFVNGTFQSTQ | 2346 | CEA.268 | 192 | 80 | 926 | -- | 6061 | 5833 | 370 | -- | 3 | 4 |
| 39.0233 | RTTVKTITVSALPK | 2347 | CEA.488 | 455 | 7031 | 317 | 364 | -- | 700 | -- | -- | 2 | 4 |
| 39.0239 | NNSIVKSITVSASGT | 2348 | CEA.665 | 91 | 25 | 676 | 3138 | -- | 51 | -- | 4083 | 3 | 4 |
| 39.0240 | NSIVKSITVSASGTS | 2349 | CEA.666 | 78 | 25 | 329 | 3957 | -- | 76 | -- | 2882 | 3 | 4 |

-- indicates binding affinity = 10,000nM.



Table XXXI. DR3 binding

| Peptide | Sequence | SEQ ID NO: | Source | DR3 nM |
|---------|------------------|------------|---------|-----------|
| 39.0313 | QNIQNDTGfYTLHV | 2350 | CEA.110 | 938 |
| 39.0314 | LHVIKSDLVNEEATG | 2351 | CEA.122 | 2308 |
| 39.0315 | KSDLVNEEATGQFRV | 2352 | CEA.126 | -- |
| 39.0316 | SDLVNEEATGQFRVY | 2353 | CEA.127 | -- |
| 39.0317 | NEEATGQFRVYPELP | 2354 | CEA.131 | -- |
| 39.0318 | QFRVYPELPKPSISS | 2355 | CEA.137 | -- |
| 39.0319 | AVAFTCEPETQDATY | 2356 | CEA.162 | -- |
| 39.0320 | TASYKCETQNPVSAR | 2357 | CEA.210 | -- |
| 39.0321 | NVLYGPDAPTISPLN | 2358 | CEA.232 | -- |
| 39.0322 | ISPLNTSYRSGENLN | 2359 | CEA.242 | -- |
| 39.0323 | SGSYTCQAHNSDTGL | 2360 | CEA.294 | -- |
| 39.0324 | TITVYAEPPKPFITS | 2361 | CEA.315 | -- |
| 39.0325 | SNPVEDEDAVLTCE | 2362 | CEA.332 | -- |
| 39.0326 | AVALTCEPEIQNTTY | 2363 | CEA.340 | -- |
| 39.0327 | NQSLPVPSPRLQLSND | 2364 | CEA.360 | -- |
| 39.0328 | RLQLSNDNRTLTLSS | 2365 | CEA.368 | 938 |
| 39.0329 | ECGIQNELSVDHSDP | 2366 | CEA.392 | -- |
| 39.0330 | QNELSVDHSDPVILN | 2367 | CEA.396 | 3659 |
| 39.0331 | NVLYGPDDPTISPSY | 2368 | CEA.410 | -- |
| 39.0332 | GVNLSLSCHAASNPP | 2369 | CEA.430 | -- |
| 39.0333 | TITVSAELPKPSISS | 2370 | CEA.493 | -- |
| 39.0334 | AVAFTCEPEAQNTTY | 2371 | CEA.518 | -- |
| 39.0335 | SDPVTLDVLYGPDTP | 2372 | CEA.582 | -- |
| 39.0336 | DVLYGPDTPHISPPD | 2373 | CEA.588 | -- |
| 39.0337 | GANLNLSCHSASNPS | 2374 | CEA.608 | -- |

-- indicates binding affinity =10,000nM.

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Table XXXII. HTL Candidate Epitopes

| Pepide | Sequence | SEQ ID NO: | Motif | Source | DR1 nM | DR4w4 nM | DR7 nM | DR3 nM | DR2w2 81 nM | DR2w2 82 nM | DR6w1 9 nM | DR5w1 1 nM | DR8w2 nM | DR147 Cross- reactivity | Broad Cross- reactivity (5/8) | DR3 Binder |
|---------|-----------------|------------|--------|---------|-----------|-------------|-----------|-----------|----------------|----------------|---------------|---------------|-------------|-------------------------------|--|---------------|
| 39.0217 | RWCIPWQRLLLTASL | 2375 | DR sup | CEA.10 | 8.2 | 542 | 357 | -- | 827 | -- | 318 | -- | -- | 3 | 5 | 0 |
| 39.0219 | EVLLLVHNLPHLFG | 2376 | DR sup | CEA.50 | 2.0 | 52 | 53 | 336 | 40 | -- | 1.0 | 588 | 408 | 3 | 7 | 1 |
| 39.0220 | GREIIPNASLLIQN | 2377 | DR sup | CEA.97 | 8.1 | 484 | 45 | 1123 | 24 | 8333 | 2.9 | 6897 | 5904 | 3 | 5 | 0 |
| 39.0313 | QNIHQNDTGFYTLHV | 2378 | DR3 | CEA.110 | 1136 | >8182 | -- | 938 | 867 | -- | 9.7 | -- | -- | 0 | 2 | 1 |
| 39.0223 | DTGFYTLHVIKSDLV | 2379 | DR sup | CEA.116 | 69 | 1731 | 227 | -- | 506 | 800 | 3889 | 2500 | 790 | 2 | 5 | 0 |
| 39.0226 | YLWVNNQSLPVSPR | 2380 | DR sup | CEA.176 | 0.60 | 8.0 | 42 | 2310 | 110 | 2105 | 2.3 | 29 | 1065 | 3 | 6 | 0 |
| 39.0328 | RLQSLNDNRITLLS | 2381 | DR3 | CEA.368 | -- | >8182 | -- | 938 | -- | -- | 729 | -- | -- | 0 | 1 | 1 |

-- indicates binding affinity =10,000nM

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